

Application No. 09/575237
Preliminary Amendment

AMENDMENTS TO THE SPECIFICATION

Please substitute the following paragraphs into the Specification:

[0048] The inventor has energetically performed studies. As a result, a fact has been detected that methocarbon microbead carbon graphitized at a baking temperature of about 2800° C is a preferred material. The methocarbon microbead carbon has high electro-chemical stability with respect to an electrolytic solution. Therefore, an effect can be obtained when it is combined with a gel electrolyte of a type adapted to an electrolytic solution containing ~~poly~~propylene carbonate.

[0054] The swelling solvent may be a nonaqueous solvent exemplified by ethylene carbonate, ~~poly~~propylene carbonate, γ -butyrolactone, acetonitrile, diethylether, diethyl carbonate, dimethyl carbonate, 1, 2-dimethoxyethane, dimethylsulfoxide, 1, 3-dioxolane, methylsulfomate, 2-methyltetrahydrofuran, tetrahydrofuran, sulfolane, 2, 4-difluoroanisole and vinylene carbonate. The foregoing materials may be employed solely or their mixture may be employed.

[0118] The solvent is a solvent which can be dispersed in the matrix polymer. A nonaqueous solvent is exemplified by ethylene carbonate, ~~poly~~propylene carbonate, butylene carbonate, γ -butyrolactone, diethyl carbonate, dimethyl carbonate, ethylmethyl carbonate and dimethoxyethane. Only one type of the foregoing materials may be employed as the solvent or two or more types of the foregoing materials may be employed.

[0163] Initially, 80 g of dimethyl carbonate, 40 g of ethylene carbonate, 40 g of ~~poly~~propylene carbonate, 9.2 g of LiPF_6 , 0.8 g of vinylene carbonate and 0.8 g of 2, 4-difluoroanisole were mixed with each other so that a solution was prepared. Then, the solution was added to 10 g of a copolymer (copolymerization weight ratio PVdF:HFP = 97:3) of polyvinylidene fluoride (PVdF) and hexafluoro~~poly~~propylene (HFP). Then, a homogenizer was used to prepare a uniform dispersion. Then, heating and stirring were performed at 75° C until a colorless and transparent state was realized. Thus, the electrolyte solution was prepared.

[0200] On the other hand, 6.7 wt% of polyvinylidene fluoride, 9.2 wt% of ethylene carbonate, 11.6 wt% of ~~poly~~propylene carbonate, 2.3 wt% of γ -butyrolactone, 6.67 wt% of dimethyl carbonate and 3.5 wt% of LiPF_6 were mixed with one another. Thus, a polymer electrolyte solution was prepared. Note that dimethyl carbonate served as solvent for dissolving polyvinylidene fluoride.